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Notice of Allowability	Application No.	Applicant(s)	
	10/713,716	ARNAUD, JOHNNY	
	Examiner	Art Unit	
	David A Reifsnnyder	1723	

-- **The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**
 All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to communication filed on March 15, 2004.
2. ☒ The allowed claim(s) is/are 8, 9, 17, 23 and 38-53 (renumbered claims 1, 2, 5, 7, 3, 4, 6 and 8-20, respectively).
3. ☒ The drawings filed on 14 November 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>11/03 and 3/04</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

In The Specification

The application has been amended as follows:

The first paragraph on page 2 has been replaced with the following amended paragraph:

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional application of co-pending application Serial No.09/879,496, originally entitled Method and Apparatus for Mixing Fluids, Separating Fluids, and Separating solids from Fluids" which is hereby incorporated by reference herein in its entirety, now U.S. Pat. No. 6,669,843, issued December 30, 2003, entitled Apparatus for Mixing Fluids" by Johnny Arnaud, also incorporated by reference herein in its entirety.

REASONS FOR ALLOWANCE

The main reason for the allowance of claims 8, 9, 38 and 39 is the instantly claimed method of separating particles from a fluid stream comprising: passing the fluid with particles into an inlet of a cyclone filter; passing the fluid with particles through a distribution channel formed between an outside radius of a ring and a larger radius of a cylindrical chamber; passing the fluid with particles through a plurality of grooves in the ring; spiraling the fluid with particles down a downflow annulus formed between a vortex finder tube and an intermediate tube; providing a collection chamber having a cylindrical upper portion and a frustoconical lower portion; removing the particles from the fluid by contacting the fluid with particles with a deflector located within the cylindrical upper portion of the collection chamber, the fluid reversing direction upon contact with the deflector; collecting the particles in the lower frustoconical portion of the collection chamber; and expelling the fluid through a fluid outlet at an upper end of the vortex finder tube.

The main reason for the allowance of claims 17 and 40 is the instantly claimed method of separating particles from a fluid stream comprising: passing the fluid with particles into an inlet of a cyclone filter; passing the fluid with particles through a distribution channel formed between an outside radius of a ring and a larger radius of a cylindrical chamber; passing the fluid with particles through a plurality of grooves in the ring; spiraling the fluid with particles down a downflow annulus formed between a skirt and an upper cylindrical end of a collection chamber; spiraling the fluid with particles

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through the downflow annulus into a lower frustoconical end of a collection chamber; removing the particles from the fluid by reversing the direction of the fluid via a low pressure of a vortex; collecting the particles in the lower cylindrical portion of the collection chamber; and expelling the fluid through a fluid outlet at an upper end of the skirt.

The main reason for the allowance of claims 23 and 41 is the instantly claimed method of separating particles from a fluid stream comprising: passing the fluid with particles into an inlet of a cyclone filter; passing the fluid with particles through a distribution channel formed between an outside radius of a ring and a larger radius of an upper cylindrical portion of a collection chamber; passing the fluid with particles through a plurality of grooves in the ring; spiraling the fluid with particles down a downflow annulus formed between a skirt and an upper cylindrical end of a collection chamber; spiraling the fluid with particles through the downflow annulus into a lower frustoconical end of a collection chamber; removing the particles from the fluid by reversing the direction of the fluid via a negative pressure of a vortex; collecting the particles in the lower cylindrical portion of the collection chamber; and expelling the fluid through a fluid outlet at an upper end of the skirt.

The main reason for the allowance of claims 42-53 is the instantly claimed method of separating particles from a fluid stream comprising: passing the fluid with particles into an inlet of a cyclone filter; passing the fluid with particles through a

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distribution channel formed between an outside radius of a ring and a larger radius of a cylindrical chamber; passing the fluid with particles through a plurality of grooves in the ring; spiraling the fluid with particles down a downflow annulus formed between a first tube and a second tube; removing the particles from the fluid by reversing the direction of the fluid; collecting the particles in a collection chamber; and expelling the fluid through a fluid outlet at an upper end of the first tube.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

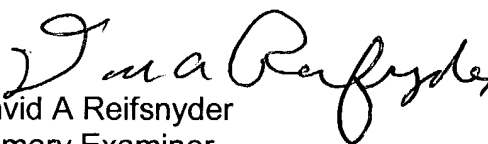
Hesse et al. who discloses a hydrocyclone comprising a inlet into a inlet chamber, the inlet chamber including a spiral insert.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Reifsnnyder whose telephone number is (571) 271-1145. The examiner can normally be reached on M-F 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda M Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


David A Reifsnyder
Primary Examiner
Art Unit 1723

DAR